THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte THOMAS L. LINSENBARDT, RICHARD D. BUCKLEY, HAROLD YOUNGER, DARRELL D. HARRIS and DENNIS J. STRUEMPH

Appeal No. 97-0612
Application 08/322,218[1]

ON BRIEF

Before STONER, Chief Administrative Patent Judge, FRANKFORT and McQUADE, Administrative Patent Judges.

McQUADE, Administrative Patent Judge.

DECISION ON APPEAL

This appeal is from the final rejection of claims 1 through 3, all of the claims pending in the application.

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[1] Application for patent filed October 13, 1994. According to appellants, the application is a continuation-in-part of Application 07/791,103, filed November 12, 1991, now U.S. Patent No. 5,359,874, issued November 1, 1994.

The invention relates to "the production of metal strips suitable for use in the coils of power transformers" (specification, page 1). Copies of claims 1 through 3 appear in the appendix to the appellants' main brief (Paper No. 10).

The references relied upon by the examiner as evidence of obviousness are:

Skinner	1,847,365	Mar. 1, 1932
Sparks	2,133,874	Oct. 18, 1938
Vaughan	4,564,347	Jan. 14, 1986

Claims 1 through 3 stand rejected under 35 U.S.C. § 103 as being unpatentable over Vaughan in view of Sparks and Skinner.

Reference is made to the appellants' main and reply briefs (Paper Nos. 10 and 12) and to the examiner's first Office action and answer (Paper Nos. 6 and 11) for the respective positions of the appellants and the examiner with regard to the merits of this rejection.

Appealed claims 1 and 2 recite a method of forming a continuous flat metal strip comprising, inter alia, the steps of feeding first and second rod-like billets to circumferential grooves formed in a rotating wheel, and advancing the billets such that metal therefrom flows through a die opening having a discontinuous, annular cross section to form a continuous tube of circular cross section having a slit formed therein. Appealed

claim 3 recites an apparatus for forming a continuous flat metal strip comprising, inter alia, a rotatable wheel having first and second circumferential grooves, means for feeding rod-like billets to the grooves, and a die having an opening with a discontinuous annular cross section such that metal from the billets flowing through the die is formed into a continuous tube of circular cross section having a slit formed therein.

The record indicates that appealed claims 1, 2 and 3 are similar to claims 1, 5 and 7, respectively, in parent Application 07/791,103 (see, for example, page 4 in the appellants' main brief). In an earlier appeal involving the parent application (Appeal No. 93-4301), this Board sustained the examiner's 35 U.S.C. § 103 rejection of claims 1, 5 and 7 as being unpatentable over the combined teachings of Vaughan and Sparks. Method claims 1 and 2 in the present appeal differ from corresponding claims 1 and 5 in the earlier appeal by requiring the slit formed in the continuous tube of circular cross section to have "curved edges." Apparatus claim 3 in the present appeal differs from corresponding claim 7 in the earlier appeal by requiring the opening in the die to have "curved ends" so that the edges of the slit in the continuous tube of circular cross section are "similarly curved." The appellants' specification indicates that

these features are advantageous in that "[b]ecause of the contoured or curved edges 97, more reliable transformers 32 are possible. This is because any sharp edges on the strip 39 would concentrate the electrical field stress and create a point from which electrical corona can initiate insulation failure" (pages 16 and 17).

In the present appeal, the appellants do not dispute the examiner's proposed combination of Vaughan and Sparks which was supported by this Board in the earlier appeal. The appellants, however, do challenge the examiner's reliance on Skinner to cure the tacitly acknowledged failure of Vaughan and Sparks to teach or suggest a method and apparatus meeting the curved edge and curved end limitations in claims 1 through 3. In this regard, Vaughan relates to the production of a whole tube having no slits, and while Sparks relates to the production of a flat strip from a slit tube, the slit would appear to have sharply cornered edges formed by a rectangular key 200.

Skinner discloses a whole metal tube extrusion method and apparatus involving "a die construction utilizing male and female elements so combined and constructed as to facilitate easy flow of the metal under pressure" (page 1, lines 4 through 7). The die construction includes a female die member 20 and a mandrel

piece 24 having a core forming male die 29 and a final mandrel terminal 30. As described by Skinner,

> [s]aid terminal 30 as shown extends inwardly within the opening of die 20, exactly concentric therewith and with the intervening surrounding space through which the extruded metal *a* emerges. Terminal 30 extends beyond the main die 29, which is connected laterally with the main filler mandrel piece 24 by the wall or web 31.
>
> Said web, as shown in Fig. 6, is as thin as it can consistently be made, the sides rounding into the main opening 27 for rigid connection with the outer metallic wall, and facilitating free flow of the metal under pressure.
>
> As indicated in Fig. 4 there is an opening 32 backwardly from the face of die 20 sufficiently long to allow for flow of the metal thereinto from both opposite sides, providing a continuously annular body of metal for some distance back of the annular extrustion [sic, extrusion] space between terminal 30 and die 20.
>
> The exposed surfaces of the various elements are preferably rounded and curved, as indicated, avoiding where possible abrupt shoulders to facilitate the flow toward the annular outlet space.
>
> The outer shoulder 33 of member 29 is rounded as shown, also facilitating flow and merging of the metal under pressure [page 2, lines 55 through 82].

The examiner has concluded that

> [i]t would have been obvious to one having ordinary skill in the art at the time the invention was made, as specified by 35 U.S.C. 103, to provide the slit-shaping key 200 of Sparks with rounded or curved edges, with corresponding curved edges being produced in the product, following the teaching of Skinner that

> curved surfaces facilitate the flow of material and that abrupt shoulders should be avoided [first Office action, page 3].

In a similar vein, the examiner states that

> it would be merely an obvious exercise of the mechanical skill expected to be possessed by a tool design engineer to provide radiused fillets in the exposed surfaces subjected to material flow in the arrangement of Sparks, such as the surfaces of key 200, following the advice of Skinner that exposed surfaces should be rounded in order to facilitate the flow of material [answer, page 4].

While Skinner does teach that extrusion die surfaces exposed to the flow of metal should be rounded and curved to facilitate such flow, the particular surfaces involved are all upstream of the outlet face of the die. Since the outlet face of a die defines the shape of the extruded product, the configuration of its surfaces is dictated by the desired shape of the product. In the present case, none of the applied references relates to a tube having a slit with curved edges, or to the appellants' reasons for making such a tube, i.e., to produce improved transformers. As indicated above, the Vaughan and Skinner products are whole tubes having no slits, and the Sparks product is a flat strip formed from a tube having a slit with sharply cornered edges. The key 200 disclosed by Skinner, which forms the sharply cornered slit, effectively constitutes part of the

Skinner die outlet face. Since the applied references are not concerned with the formation of a tube having a slit with curved edges, it is not apparent why the artisan would have found it obvious to modify Sparks' slit-forming key 200 in the manner proposed by the examiner. We are therefore constrained to conclude that the examiner has engaged in an impermissible hindsight reconstruction of the appellants' invention by using the appealed claims as an instruction manual to selectively piece together isolated disclosures in the prior art to meet the curved edge and curved end limitations in these claims. This being the case, we shall not sustain the standing 35 U.S.C. § 103 rejection of claims 1 through 3 as being unpatentable over Vaughan in view of Sparks and Skinner.

The decision of the examiner is reversed.

REVERSED

BRUCE H. STONER, JR. Chief Administrative Patent Judge	)	
CHARLES E. FRANKFORT Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
JOHN P. McQUADE Administrative Patent Judge	)	

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